floe that covers the Arctic Ocean from America to Siberia appears to circulate about the pole with the winds and currents, moving eastward and northward on the Siberian side but eastward and southward on the American side.

OREGON WEATHER AND BERING SEA ICE.

In the March report of the Oregon section Mr. E. A. Beals, Section Director, quotes from a recent pamphlet by Mr. James Page, meteorologist to the United States, Hydrographic Office, On Ice and Ice Movements in Bering Sea in the Spring Months, as follows:

The pack ice annually moves, roughly speaking, as far south as latitude 58° N. and retreats in the summer to about 71° N., and it is natural to suppose that the movements of this large body of ice would have some influence on the climate of Oregon and Washington. By taking the two early years of 1890 and 1897 it is found that the May temperatures in Portland averaged 4° daily above the normal in the one case, and 2° daily above the normal in the other, and in both the rainfall was decidedly deficient.

The May rainfall has been deficient in years when the ice retreated northward more slowly, but in none of the ten years' record under consideration did the temperature exceed the normal with a slow northward movement, except in 1891, and then the excess was less than half a degree for each day.

The steamer *City of Seattle*, which arrived from Alaska March 31, brings the news that the ice in the Upper Yukon shows signs of breaking up, and that possibly the river will be navigable this spring six weeks earlier than usual.

It may be that the signs of an early spring on the Yukon also imply an early retreat of the pack ice in Bering Sea, and it will be interesting to note how (if this should be the case) the May temperatures in Oregon and Washington will respond for the third time to such conditions.

Vessel and year.	Entered into ice.	Emerged from ice.	Interval in ice.	Average date.	Portland, Oreg., for May.	
					Rain.	Temperature.
1890.	*Day.*	*Day.*	*Days.*	*Day.*	*Inches.*	°
Steamship Orca	100	137	37	118.5		
Steamship Balaena	106	134	28	125.0		
Steamship Narwhal	111	122	11	116.5		
Steamship Grampus	123	135	12	129.0		
				122.2	1.08	60.6
1891.						
Steamship Balaena	103	155	52	129.0		
Steamship Orca	104	150	46	127.0		
Steamship Narwhal	112	155	43	133.5		
				131.5	1.83	59.9
1892.						
Steamship Orca	107	157	50	132.0		
Steamship Narwhal	108	140	32	124.0		
Steamship Beluga	109	143	34	126.0		
Steamship Grampus	123	141	18	132.0		
				131.0	0.80	59.0
1893.						
Steamship Orca	106	149	43	127.5		
Steamship Beluga	110	154	44	132.0		
Steamship Thrasher	118	154	36	136.0		
Bark John Winthrop	124	163	39	143.5		
				134.8	2.30	54.4
1894.						
Steamship Orca	103	144	41	123.5		
Steamship Thrasher	103	134	31	118.5		
Bark Wanderer	105	162	57	133.5		
Bark John Winthrop	110	147	37	128.5		
Steamship Beluga	112	149	37	130.5		
				126.9	1.09	55.5
1895.						
Steamship Orca	112	153	41	132.0		
Steamship Balaena	121	148	27	134.0		
Steamship Narwhal	122	146	23	134.0		
Steamship Grampus	129	152	23	140.0		
				135.0	3.42	55.9
1896.						
Steamship Narwhal	93	140	47	116.0		
Steamship Orca	105	146	41	125.0		
				120.5	3.55	52.2
1897.						
Steamship Thrasher	96	128	32	112.0		
Steamship Jeannette	101	133	32	117.0		
Steamship Narwhal	108	139	31	124.0		
Steamship Balaena	113	140	27	126.0		
				119.8	0.90	61.4
1898.						
Steamship Jeannette	110	136	26	123.0		
				123.0	1.78	56.6
1899.						
Steamship Bowhead	109	140	31	124.0		
Steamship Wm. Bayless	100	135	35	118.0		
				121.0	3.16	51.1

On referring to Mr. Page's pamphlet the reader will find a chart of Bering Sea, showing the southern limits of the ice field, on the average of ten years' of experience and observation, between April 15 and May 15. It appears that the southern edge of the ice will in normal seasons connect the Asiatic Continent at latitude 61°, and the American Continent at latitude 59° along an irregular line whose southern limit is, however, not an altogether safe index to the general character of the preceding winter. The early entrance of a vessel into this ice field by no means assures its early emergence from it. On the route northward the length of time spent in the ice pack and the average date between the entrance and emergence off Indian Point may give us a crude idea as tothe importance of the ice and its meteorological significance. The dates are expressed in days, counting from January 1.

If we compare the above figures showing the dates at which it was possible to navigate through the ice, we see a steady retardation of dates from 1890 to 1895, and increase of interval. If we accept these figures as in any way indicating the general character of the ice covering Behring Sea we may make this data the basis for comparing the temperatures at Portland, Oreg., with the condition of the ice. We have, therefore, in the above table added the temperatures and rainfall for May at Portland, thereby reproducing the data that Mr. Beals probably had at hand in writing his paragraph as quoted above. An early passage through the ice implies a rapid movement of the ice northward; therefore early dates in our fifth column should correspond with warm weather, and warm water and southerly winds in Bering Sea south of the ice pack. But the above table does not clearly show that early dates also correspond with warm weather or deficient rainfall in the subsequent month of May at Portland, except for the two years 1890 and 1897.

The whole series may be arranged in order of dates as follows:

Year.	Average date.	Temperature.	Rain.	Year.	Average date.	Temperature.	Rain.
1897	119.8	61.4	0.90	1894	126.9	55.5	1.09
1896	120.5	52.2	3.55	1892	131.0	59.0	0.80
1899	121.0	51.1	3.16	1891	131.5	59.9	1.83
1890	122.2	60.6	1.08	1893	134.8	54.4	2.30
1898	123.0	56.6	1.78	1895	135.0	55.5	3.42
Average	121.3	56.4	2.09	Average.	131.5	57.1	1.89

THE BROOKLYN MUSEUM OF METEOROLOGY.

The Brooklyn Institute of Arts and Sciences has taken a leading position in the art of public instruction. There are in that city 200,000 children of whom about 90,000 do not go to school, and yet all are provided for in some way or other by the museums and lectures of the Institute at No. 185 Brooklyn avenue.

It is the purpose of the childrens' museum to build up gradually for the children and young people of Brooklyn and Queens County, a museum that will delight and instruct the children who visit it; to bring together collections in every branch of local natural history that is calculated to interest children and to stimulate their powers of observation and reflection; to illustrate by collections of pictures, cartoons, charts, models, maps, and so on, each of the important branches of knowledge which is taught in the elementary schools.

At the present time the collections exhibited in the museum illustrate many branches of industry, such as the iron production and manufacture, and many branches of science such as botany, zoology, geology, physiology and many other branches of knowledge, such as human anatomy, geography,

and history, the evolution of the steam engine, anthropology, and the physical sciences. We are especially interested in the collections illustrating meteorology.

All the chief instruments employed in Government meteorological work have for some time past been installed and steadily recording atmospheric phenomena. These comprehend the following instruments: barographs, thermographs of two forms—Draper's and Richard's, solar radiation thermometers, psychrometers, wind electrical registration apparatus, the anemometer employed being the Robinson form, aneroid barometers, charts, maps, and rain measuring apparatus. There will also be installed electrical rain and snow recording apparatus, electrical sunshine recorder, and additional psychrometers. Samples of the instrumental charts are shown, as well as the complete series of publications which are based on these instruments. Since each instrument has a special explanatory label stating the kind of work which it is doing, the collection should be very useful to teachers and visiting classes.

In addition to these collections, courses of lectures are provided, and the second course in the series, which was inaugurated in April, embraced meteorology and was illustrated by practical illustrations with apparatus.

These lectures were entitled "A course of Instruction in Elementary Meteorology," and were delivered by Prof. Richard E. Call on eight successive Friday afternoons at 4 o'clock, beginning with April 20, and supplemented by two Saturday excursions, on which occasions the observing stations in the vicinity of New York City were inspected. The lectures were intended especially for teachers, but only forty could be admitted on account of the limited capacity of the room. The courses were free, but every one who registered must agree to attend the whole course. The titles of the lectures were as follows:

I. April 20. The Elementary Principles of Physics involved in Meteorology.

II. April 27. The Atmosphere and its Circulation.

III. May 4. Atmospheric Temperatures, their Measurement and Distribution.

IV. May 11. The Barometer; its Theory and its Use.

V. May 18. The Moisture of the Atmosphere.

VI. May 25. The Causes and Distribution of Rainfall.

VII. Weather and Climate.

VIII. June 8. Optical and Electrical Phenomena of the Atmosphere.

LECTURES ON METEOROLOGY.

Mr. Charles E. Linney, Section Director, Springfield, Ill., addressed the Kane County Farmers' Institute at Geneva on February 6, and also the Congregational Club at Springfield on February 13. He exhibited the thermometer, barometer, anemometer, rain gage, and also maps and charts. The lectures were followed by questions from the audience and replies by Mr. Linney, and in both cases were so well received that he has been requested to repeat them.

Mr. C. W. Ling, Observer, Havre, Mont. delivered an excellent lecture to the pupils of the grammar school at Havre, on January 17. This was in connection with the regular course on geography, and served to broaden the ideas of the pupils as to the comprehensiveness of that term. One can not study the divisions of the earth into land and water without asking how it all came about. We find that the atmosphere with its winds and rains has taken a most prominent part in the formation of the continents, with their mountains and valleys, so that not merely animal and vegetable life, but even the land itself and the ocean, depend upon the atmosphere. Mr. Ling's lecture was largely occupied with a description of the daily map and the official work of the Bureau.

Mr. P. Connor, Local Forecast Official at Kansas City, Mo., writes as follows:

It may be a surprise for eastern schools and eastern readers to hear that one of the high schools of Kansas City, Mo., has adopted meteorology in its curriculum, as one of the elective studies of the school, to be pursued systematically the same as botany or geology, German or Latin.

It is with pardonable pride that I allude to this, for I have been here so long that I am identified with the city's interests. I may also add that it is proof that meteorology has not been a dead issue in this community. I think that the Weather Bureau should feel a genuine interest in having the stamp of popularity thus placed upon this branch of science.

Mr. Porter Graves has the chair of meteorology, and he is entitled to much credit for having advocated its adoption. He started with a class of twenty-five last winter, but expects a much larger class, if not two classes, next year. Observations are taken at noon, daily, of barometer, dry and wet thermometers, clouds, etc. Six weather maps have been furnished daily for study. The class has visited this office to learn the practical working of all the instruments, and in many other ways we have cooperated with Mr. Graves to make his work a success.

On March 16 the Editor had the privilege of an hour's talk with the teachers of Baltimore, Md., on popular methods of presenting meteorology to the lower grades in the public schools. He dwelt on the simplicity of children's thoughts, the honesty and directness of their questions. Every question that a child asks is legitimate and demands an honest, satisfactory, and truthful reply. The study of nature is instinctively the child's daily work; he needs no stimulus, but neither should he be repressed. The teacher should encourage him to collect leaves, stones, shells, bugs, it matters not what; teach him to observe most carefully by seeing, feeling, and listening, The child observes and thinks: the teacher is to supply him with the appropriate words from that encyclopedia of all knowledge, the English dictionary. The teacher should also help him to reason correctly, for that, strange to say, is an art that does not come by intuition, but only by experience guided by observation and experiment. Agassiz educated naturalists by giving them a mass of material and asking them to tell him what they saw and what conclusions they could draw. It is not our business to fill the mind with other people's ideas but to make the child's mind develop such ideas as the better judgment of the teacher recognizes as appropriate and true. *Meteorology is first to be studied* by observation and record; we begin by recording general impressions but gradually develop greater exactness by the help of instruments. A class of children may keep a regular record in common, as a class, or still better, individually, as persons, showing the wind, temperature, cloudiness, weather, and other details at 8 a. m. every morning. In reasoning upon these items the child begins to think of temperature, moisture, and pressure as the ultimate causes, and may then begin to observe and understand the thermometer, barometer and hygrometer. There is nothing scientific that man has learned from nature but what may be made comprehensible to the child. No matter how great the difficulties experienced by the scientist in getting at the facts and laws of nature, yet, when once attained, they seem to be so elegant and natural that the child can easily learn them. It is unnecessary and wrong to answer a child's inquisitiveness by saying that so-and-so is too difficult. It may be difficult for the teacher to explain it, but it is not too difficult to comprehend when once it is properly explained. It is much more proper for the teacher to say I do not know or I can not explain, than to say the thing is too difficult for you. All the scientific